

# SEARCHING FOR GRAY GHOSTS

Why FWP biologists spent five years  
looking for great gray owls

STORY AND PHOTOS BY RONAN DONOVAN

**AWAITING A REPLY** Deep in a forest south of Bozeman this past winter, FWP regional wildlife biologist Claire Gower plays a recording of a boreal owl in the hopes that a great gray owl will respond and reveal its location.

It's a crisp, clear late-winter night with a full moon rising over the distant snow-capped mountains, which seem to glow from within.

Claire Gower straps on her cross-country ski boots and arranges gear on a pickup tailgate by the light of her headlamp. It's late—7:45 p.m.—with temperatures down to the teens, and Gower is still working. A regional wildlife biologist for Montana Fish, Wildlife & Parks, she is responsible for managing, conserving, and studying species ranging from bats to small forest carnivores to birds. Despite the cold and dark, she's cheery as we head out to see if she can locate one particular

forest-bird species: the great gray owl.

Gower and several other FWP wildlife biologists contributed to a recently completed five-year survey across western and southwestern Montana to better understand the distribution of this largest North American owl and the ideal habitat for rearing its young. Like spadefoot toads, wolverines, and black swifts, great grays are rarely seen. Little is known about their numbers or locations, making them a Montana Species of Greatest Inventory Need. That means FWP puts them at the top of the list for surveys to determine where the forest owls live across the state. Using that baseline information, biologists can then figure out if wildfire, beetle kill, and logging alter great gray habitat and populations.

#### HOME OF THE HUNTERS

Great gray owls are a species of mature northern forests. Their habitat of large old trees, often next to open meadows, has been declining for decades due to logging and warming temperatures. The owls nest on broken-top snags or in abandoned stick nests built by northern goshawks or ravens. With a broad wingspan of over 4 feet, they silently glide over meadows like ghosts, hunting for small mammals such as voles and pocket gophers.

In winter, the owls hunt by sound alone. Using their giant dish-shaped face and offset ears to home in on the faintest squeaks and



**LONG DAY** FWP regional wildlife biologist Claire Gower prepares to cross-country ski deep into the Custer-Gallatin National Forest south of Bozeman in search of great gray owls.



**BIG BUT ELUSIVE** Though occasionally seen on winter days throughout western Montana, the large owls are difficult to survey to determine population and distribution. By identifying the types of habitats great grays used when previously spotted, wildlife scientists are now able to predict where the raptors are most likely to be found.



**HOME IN THE NORTHERN FOREST** Above left: Montana's largest owl species, great grays often nest in the top of broken snags or in old goshawk or raven nests. Above right: The prints of a great gray show where it plunged feet-first into the snow to grab a small rodent it heard while flying overhead.

rustlings, they'll plunge down into deep snow to catch a tunneling rodent with their long legs and razor-sharp talons.

Montana is one of the few states where great gray owls make a living south of the 49th parallel. But timber harvest, forest fires, beetle-killed trees, and climate change threaten the species' breeding success and populations. For instance, it's becoming increasingly difficult for the raptors to hunt successfully in winter as variable temperatures cause more thawing and freezing, building thick snow crusts the birds can't punch through.

Gower shoulders her backpack and we ski into the Custer-Gallatin National Forest, 15 miles south of Bozeman. Moonlight casts long, bluish shadows in the dim conifer forest as we trudge along. She is heading to a site randomly selected through a survey model developed by Dr. Hannah Specht, a research scientist at the University of Montana.

To figure out the species' distribution across the state, where the owls breed, and the habitat they use, biologists needed a survey method most likely to locate the birds. Specht used known nest locations of owls from the Montana Natural Heritage Program, the U.S. Forest Service, FWP, the Owl

Research Institute, and eBird to assess habitat suitability. By analyzing the habitat features, she devised a model of the best nesting habitat. Survey locations target these "best areas" to ensure that biologists conduct their surveys where owls are most likely to live.

#### NIGHT SURVEYS

Specht combined variables from known nest sites (including slope, land cover, vegetation height, and vegetation cover) to create a map. It shows the best potential great gray owl habitats across the species' range in Montana, and identifies survey locations that would encom-

pass the core territory of a breeding owl pair—roughly 1.5 to 3.5 square miles.

Gower and her colleagues listened for great gray owls in these locations to determine the bird's distribution across Montana—and to learn how easy or difficult it is to find an owl in a likely area. I'm out with her tonight to learn how the biologists conduct their surveys. I've photographed the majestic raptors for years but haven't a clue how they would be scientifically tallied.

After a 30-minute ski, Gower stops on the edge of a meadow surrounded by forest, the distant peaks of the Gallatin Range



**INTO THE NIGHT** Another eight-minute survey completed, Gower skis to another location identified by Dr. Hannah Specht of the University of Montana as a likely place to hear a great gray owl.

**WE ARE HERE** Gower records the GPS location of a survey in the Custer-Gallatin National Forest.

jutting up toward the stars. The night is still, with no wind—perfect for listening. She pulls a large speaker from her backpack and begins to play a series of recorded owl vocalizations designed to draw out a response from great grays.

Each survey lasts exactly eight minutes and follows a standardized protocol. It starts with Gower listening silently for three min-

utes. Then, for 20 seconds, she plays the call of a boreal owl (a species whose territory can overlap with great grays, eliciting what's known as a territorial response). Then one minute of silent listening, 20 seconds of broadcasting great gray vocalizations, another minute of listening, 20 seconds of great gray vocalizations, and finally two more minutes of listening.

Within a minute of playing the first series of boreal owl calls, Gower and I hear a loud, sharp *kip!* from the edge of the meadow. It's an owl, though not a great gray. A boreal owl coming to investigate a suspected intruder has made an alarm call.

Gower finishes the eight-minute survey before we head to the next site indicated on her map. As we lay fresh tracks through the deep snow, we hear the boreal owl switch to its more familiar call, a series of accelerated *toots* that sound like sharp, fast notes on a flute.

#### BETTER ADVICE

Surveyors use this nighttime in-person "call-back" method during the mid-February to late April breeding season. They repeat each survey twice during that period to increase the odds they'll locate an owl.

A second method uses small "autonomous

recording units" (ARUs), affixed to trees within each survey grid. These remain in the forest, during the breeding season, for a week to record vocalizing great gray owls up to 300 meters away. Biologists then ski or snowmobile in to retrieve the recordings and, back at the office, run them through software that can identify different bird species by their calls.

After Gower and I arrive at the next survey location, she pulls out her speaker and repeats the call-back process. When the eight minutes are up, we talk about what FWP will do with the survey results.

"If we can better understand the habitat characteristics that a great gray owl is looking for, FWP and agencies like the U.S. Forest Service can use that information when they develop forest management plans," Gower says. She adds that the Forest Service and other conservation partners have requested Specht's habitat model and the details of FWP's monitoring methods so their own crews can do surveys.

"What we're doing tonight will help all of us more accurately predict whether owls are in certain areas and provide better direction for protecting owls and their nesting habitat," she says. 🦉



**GOOD NEWS** Using results from the new survey, FWP can now provide better direction to land management agencies like the U.S. Forest Service on how they can locate owls and best protect the birds' nesting habitat.